

**IN THE CLAIMS:**

1. (Currently Amended) Apparatus for depolarizing light comprising:  
a beam splitter having an input and two outputs, where a light beam from a first output has a polarization that is orthogonal to a polarization of a light beam from a second output;  
a beam combiner having a first input coupled to the first output of the beam splitter via a first fiber, a second input coupled to the second output of the beam splitter via a second fiber, and an output that produces depolarized light, where the first and second fibers are polarization maintaining fibers and the second fiber has a length that provides a predefined delay with respect to the first fiber such that an interference signal having a delay equal to the predefined delay will be suppressed during a demodulation process; and  
first and second reflectors coupled to the output of the beam combiner to form an interferometer, wherein the reflectors are spaced from one another to provide the interference signal; and  
a light source, coupled to the beam splitter, having a frequency swept output and the predefined delay is selected to ensure that a cross-correlation between orthogonal polarizations of the source do not appear in extracted signal frequencies within a receiver.
2. (Canceled)
3. (Currently Amended) The apparatus of claim [[2]] 1 further comprising a polarization controller, coupled between the light source and the input of the beam splitter, for equalizing signal power levels at the first and second outputs of the beam splitter.
- 4-6. (Canceled)

7. (Currently Amended) The apparatus of claim [[6]] 1 further comprising a polarization controller, coupled to the input of the beam splitter, for equalizing signal power levels at the first and second outputs of the beam splitter.

8. (Currently Amended) Apparatus for depolarizing light comprising:

means for splitting a light beam having an input and two outputs, where a light beam from a first output has a polarization that is orthogonal to a polarization of a light beam from a second output; and

means for combining two light beams having a first input coupled to the first output of the beam splitter via a first fiber, a second input coupled to the second output of the beam splitter via a second fiber, and an output that produces depolarized light, where the first and second fibers are polarization maintaining fibers and the second fiber comprises a means for providing a predefined delay with respect to the first fiber such that an interference signal having a delay equal to the predefined delay will be suppressed during a demodulation process; and

first and second reflectors coupled to the output of the means for combining two light beams to form an interferometer, wherein the reflectors are spaced from one another to provide the interference signal; and

a light source, coupled to the beam splitting means, having a frequency swept output and the predefined delay is selected to ensure that a cross-correlation between orthogonal polarizations of the source do not appear in extracted signal frequencies within a receiver.

9. (Canceled)

10. (Original) The apparatus of claim 8 further comprising means for controlling polarization, coupled to the input of the beam splitting means, where the polarization controlling means equalizes signal power levels at the first and second outputs of the beam splitter.

11-13. (Canceled)

14. (Currently Amended) The apparatus of claim [[13]] 8 further comprising means for controlling polarization, coupled to the input of the beam splitter, where the polarization controlling means equalizes signal power levels at the first and second outputs of the beam splitter.

15-16. (Canceled)

17. (Previously Presented) Apparatus for depolarizing light comprising:

a beam splitter having an input and two outputs, where a light beam from a first output has a polarization that is orthogonal to a polarization of a light beam from a second output;

a beam combiner having a first input coupled to the first output of the beam splitter via a first fiber, a second input coupled to the second output of the beam splitter via a second fiber, and an output that produces depolarized light, where the first and second fibers are polarization maintaining fibers and the second fiber has a length that provides a predefined delay with respect to the first fiber such that an interference signal having a delay equal to the predefined delay will be suppressed during a demodulation process; and

a light source, coupled to the beam splitter, having a coherence length that is less than a length of an interrogation pulse that is formed using the depolarized light.

18. (Previously Presented) The apparatus of claim 17, further comprising a polarization controller, coupled to the input of the beam splitter, for equalizing signal power levels at the first and second outputs of the beam splitter.

19. (Previously Presented) Apparatus for depolarizing light comprising:

a beam splitter having an input and two outputs, where a light beam from a first output has a polarization that is orthogonal to a polarization of a light beam from a second output;

a beam combiner having a first input coupled to the first output of the beam splitter via a first fiber, a second input coupled to the second output of the beam splitter via a second fiber, and an output that produces depolarized light, where the first and second fibers are polarization maintaining fibers and the second fiber has a length that provides a predefined delay with respect to the first fiber such that an interference signal having a delay equal to the predefined delay will be suppressed during a demodulation process; and

a light source, coupled to the beam splitter, having a frequency swept output and the predefined delay is selected to ensure that a cross-correlation between orthogonal polarizations of the source do not appear in extracted signal frequencies within a receiver.

20. (Previously Presented) The apparatus of claim 19, further comprising a polarization controller, coupled to the input of the beam splitter, for equalizing signal power levels at the first and second outputs of the beam splitter.